



Global Grid Forum

www.ggf.org

March, 2003

- An Open Process for Development of Agreements and Specifications for Computational and Data Grids
 - Grid “Recommendations” process
 - modeled after Internet Standards Process (IETF, RFC 2026)
 - Persistent, Reviewed Document Series
 - similar to RFC series; initiated October 2001
 - Intellectual Property policies (RAND) modeled after IETF policies

- A Forum for Information Exchange and Collaboration
 - Comparing notes on experiences, approaches
 - Spanning vertical layers, including people who are
 - Doing Grid Research
 - Designing and Building Grid software
 - Deploying Grids
 - Using Grids
 - Spanning technology areas
 - From directory services to scheduling to data handling to security to collaboration environments to...

What is the IETF and Why Use it as a Model



- The Internet Engineering Task Force (IETF) is
 - A large, open, international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet
 - It is open to any interested individual – organizations (e.g. companies) do not have “membership” (unlike more traditional standards orgs.)

IETF has “Standardized” the Foundation of all Internet Services



- There are 3500 RFCs
- Internet Protocol (IP)
- IP over Ethernet, ATM, SONET, wireless devices, etc.
- Internet Relay Chat (IRC)
- Routing
- Transport (TCP)
- DNS (naming – nas.nasa.gov)
- Secure transport (SSL/TLS)
- DHCP (dynamic addresses)
- HTTP, HTTPS
- FTP
- Email and MIME attachments (Multipurpose Internet Mail Extensions)
- Multimedia delivery
- Secure shell (SSH)
- E-Commerce (e.g. XML Internet Open Trading Protocol)
- Authentication, Authorization, Accounting

What is the IETF and Why Use it as a Model



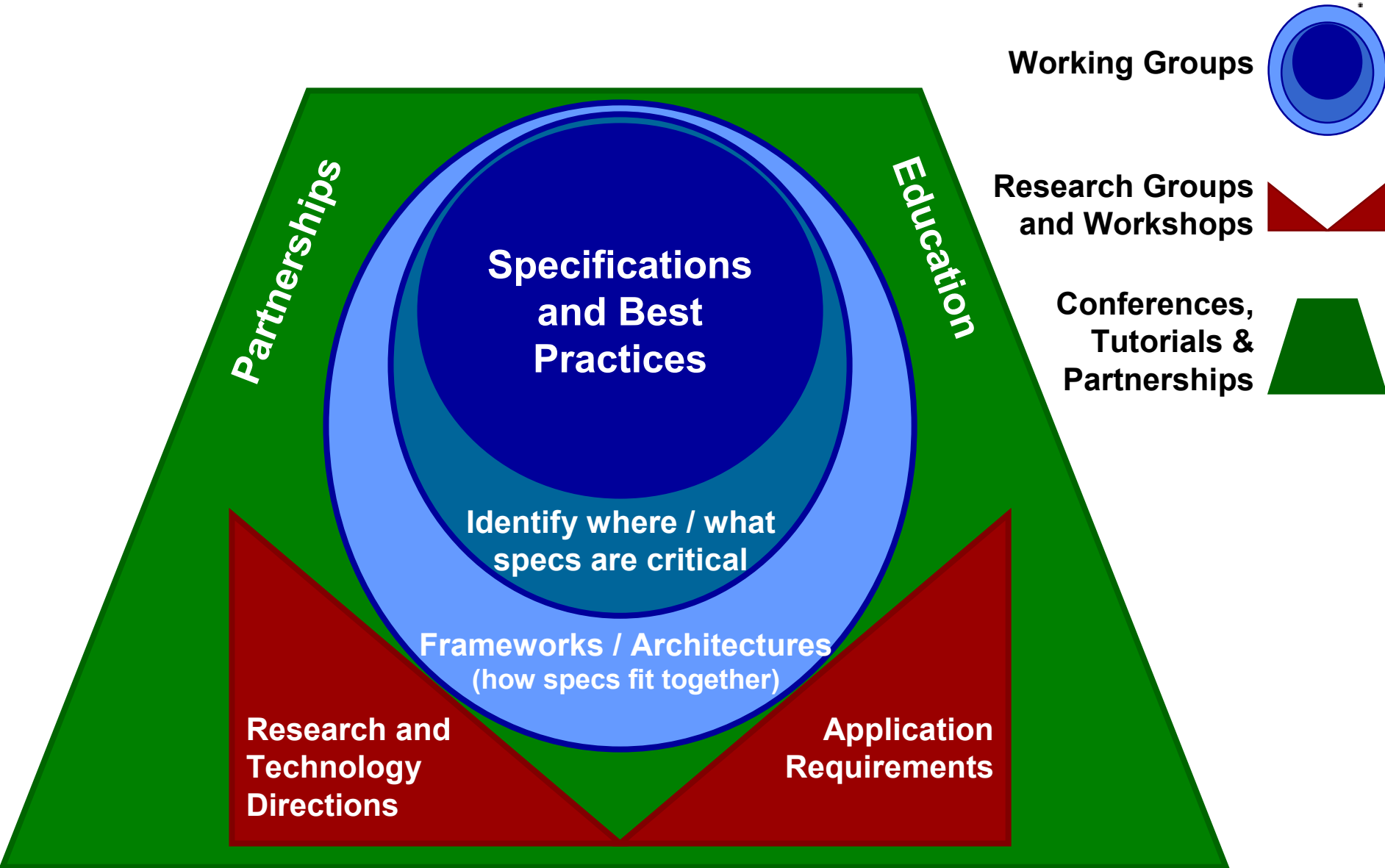
- The IETF Working Groups are grouped into areas, and managed by Area Directors, or ADs
 - ADs are members of the Internet Engineering Steering Group (IESG)
- Internet Architecture Board, (IAB)
 - provides architectural oversight
 - adjudicates appeals when someone complains that the IESG has failed
- The IAB and IESG are chartered by the Internet Society (ISOC) for these purposes
- There is also an Internet Research Task Force (IRTF)

IETF Areas and Example Working Groups



- General Area
- Internet Area
- Operations and Management Area
- Routing Area
- Security Area
- Sub-IP Area
- Transport Area
- Electronic Data Interchange-Internet Integration
- LDAP
- WWW Distributed Authoring and Versioning
- IP over InfiniBand
- IP Version 6
- IP Routing for Wireless/Mobile Hosts
- Kerberos
- Public-Key Infrastructure (X.509)
- Transport Layer Security
- XML Digital Signatures
- Network File System (NFS) Version 4
- IP Telephony
- IP Storage

What is GGF?

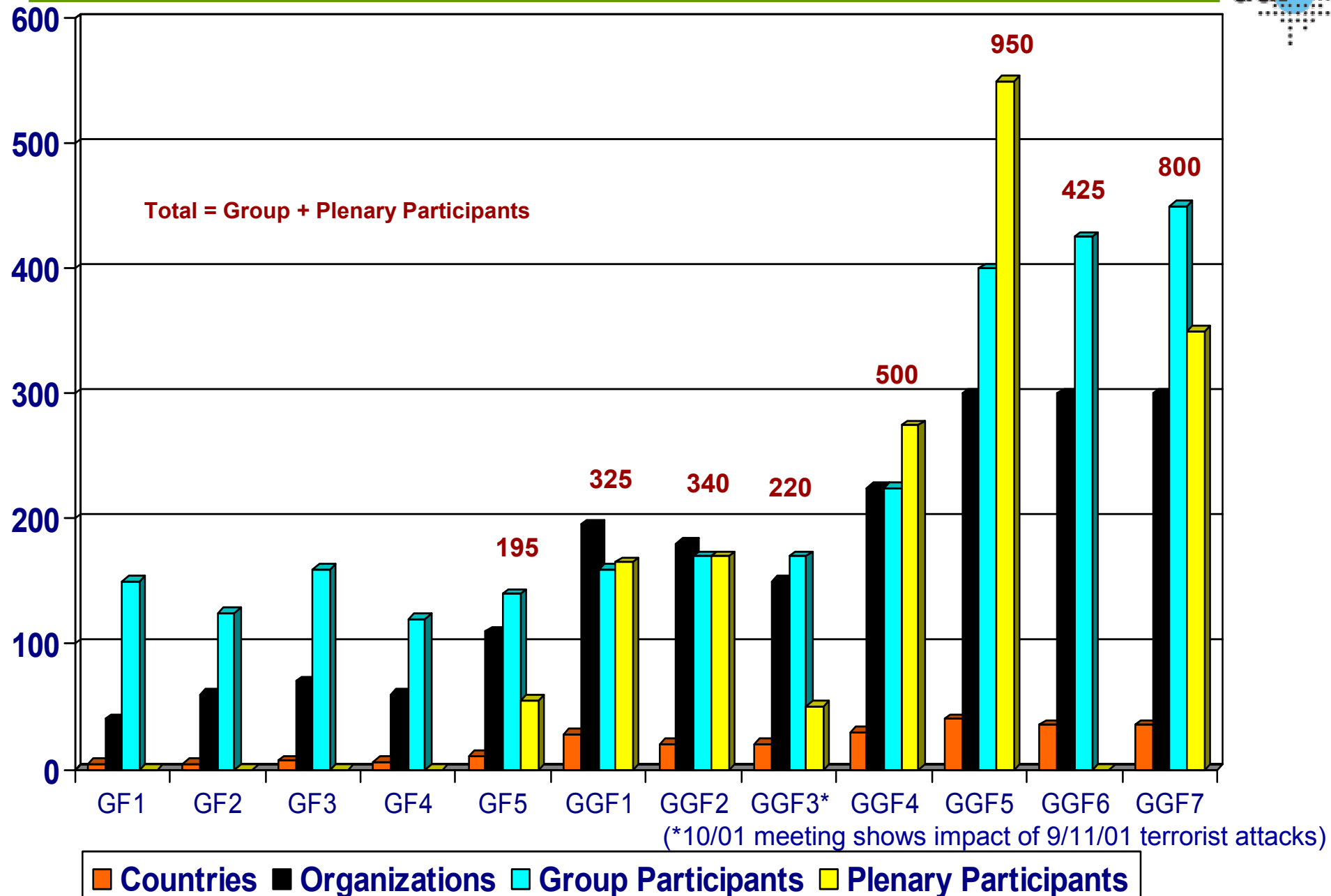


History of GGF



- BOF, SC98 Conference, 11/98, Portland, OR, USA
 - Resulted from the interest that was generated by writing “The Gird,”, Foster and Kesselman, eds.
- GF1, 06/99, NASA Ames Research Center, Moffett Field, CA, USA
 - A plenary meeting decided the major areas of interest, which were used to form the GF Areas
- GF2, 10/99, Northwestern University, Chicago Campus, IL, USA
- GF3, 03/00, USDC Campus, La Jolla, CA, USA
- GF4, 07/00, Microsoft Campus, Redmond, WA, USA
- GF5, 10/00, Marlborough, MA, USA
- GGF1, 03/01, Amsterdam, The Netherlands
- GGF2, 07/01, Tysons Corner, VA, USA
- GGF3, 10/01, Frascati (Rome), Italy
- GGF4, 02/02, Toronto, Ontario Canada
- GGF5, 07/02, Edinburgh, Scotland
- GGF6, 10/02, Chicago, IL, US
 - (first GGF Working Group only meeting, i.e., no plenary)
- GGF7, 03/03, Tokyo, Japan

GGF Growth from June 1999 through March 2003



42 GGF Groups in Seven Areas as of Jan. 2003



Applications and Programming Environments

Grid Checkpoint/Recovery
Advanced Programming Models RG)
Grid Computing Environments RG
Life Sciences Grid RG

Advanced Collaborative Environments RG
Applications and Test Beds RG
Grid User Services RG

Architecture

Open Grid Services Infrastructure WG
New Productivity Initiative WG
Accounting Models RG
Service Management Frameworks RG

Open Source Software WG
Open Grid Services Architecture WG
Grid Protocol Architecture RG
Production Grid Management RG

Data

GridFTP WG
Data Replication R
Grid High-Performance Networking RG

Data Access and Integration Services WG
Persistent Archives RG
Data Transport WG

Information Systems and Performance

Discovery and Monitoring Event Description WG
Grid Information Retrieval WG
Relational Grid Information Services RG
Semantic Grid RG

Network Measurement WG
CIM based Grid Schema WG
Grid Benchmarking RG)

Peer-to-Peer

Appliance Aggregation RG

OGSA-P2P-Security WG

Scheduling and Resource Management

Scheduling Attributes WG
Distributed Resource Management Application API WG
OGSA Resource Usage Service WG
Usage Record WG

Scheduling Dictionary WG
Grid Resource Allocation Agreement Protocol WG
Grid Economic Services Architecture WG

Security

Grid Security Infrastructure WG
Open Grid Service Architecture Security RG
Large Site AAA WG

Grid Certificate Policy WG
CA Ops WG

GGF Structure



GGF, Inc.

Secretariat: Operations

Board of Directors

- (Catlett, Messina, Spada)
- Financial, Legal Responsibility
 - Appoints GGF Chair

Conference Mgmt

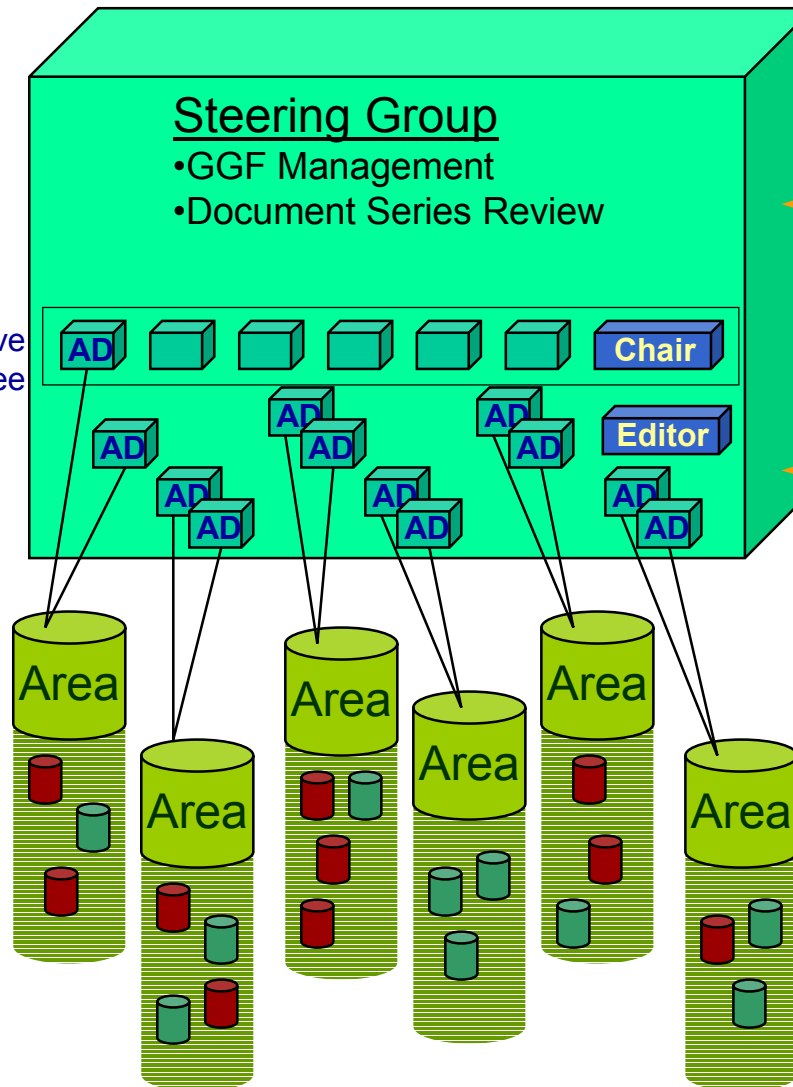
Sponsor Programs

Finance/Legal

IT (Website, etc.)

Staffing & Services

Executive Committee



GGF

Documents and Standards Work

GGF Advisory Committee

- Advise on strategic direction & industry, government relations
- Advise on governance

Grid Research Oversight Council

- RG/WG Workshop series
- Advise on Research Issues

= working group

= research group

Holds *non-exclusive* copyright for document series

- USA
 - Ian Baird (Platform Computing)
 - Charlie Catlett (ANL) [Chair]
 - Andrew Chien (Entropia)
 - Ian Foster (ANL/UC)
 - Andrew Grimshaw (Avaki)
 - Marty Humphrey (UVA)
 - Bill Johnston (LBNL/NASA)
 - Ken Klingenstein (Internet2)
 - Jeff Nick (IBM)
 - Bill Nitzberg (Veridian)
 - Jennifer Schopf (ANL)
 - Steve Tuecke (ANL)
- Europe
 - Peter Clarke (UCL/UK)
 - Cees DeLaat (UVA/NL)
 - Domenico LaForenza (CNUCE)
- Asia Pacific
 - Satoshi Matsuoka (Tokyo Inst. Tech)
 - Satoshi Sekiguchi (ETL)
- GFSG Role
 - Operational management and policy
 - Document series review
 - Chartering of new groups
 - Group oversight and review
- GFSG Structure
 - Two area directors per area
 - Oversee liaisons with other Groups
 - IETF, Internet2, W3C, DMTF, OASIS, IPv6 Forum
- GFSG Participation
 - Individuals, not org.representatives
 - Selected by NomCom

- Area Directors are responsible for overseeing WGs/RGs to ensure that progress is being made and that the charter is being accomplished.
- Areas
 - Applications and Programming Environments
 - Satoshi Matsuoka
 - Architecture
 - Bill Johnston, Jeff Nick
 - Data
 - Peter Clarke, Satoshi Sekiguchi
 - Information Systems and Performance
 - Domenico Laforenza, Ian Baird
 - Peer-to-Peer: Desktop Grids
 - Cees DeLaat, Andrew Chien
 - Scheduling and Resource Management
 - Bill Nitzberg, Jennifer Schopf
 - Security
 - Marty Humphrey, Steve Tuecke

- Working Groups
 - narrowly focused on an appropriate topic
 - must have specific milestones, usually related to producing a “best practice” document
 - have a finite lifetime
 - not overlapping with other WGs
 - usual output is one or more documents
- Evidence of sufficient community interest must be provided for formation
 - a birds-of-a-feather (BOF) session may be run to generate or demonstrate community interest
- Operating
 - Two co-chairs, sect., Web site, email list and archive (at www.ggf.org)

- Research Groups
 - more broadly focused than WGs
 - may explore the potential interaction / impact of new technologies or other groups on Grids
 - usual output is one or more informational documents
 - have a 1 – 2 yr lifetime
- Evidence of sufficient community interest must be provided
 - a birds-of-a-feather (BOF) session may be run to generate or demonstrate community interest

- Purpose: Involve the research community more deeply in the future of GGF because Grid technology is evolving so fast in so many directions it is essential that we keep the people doing advanced research part of the GGF community
- Three types – proposed only by existing WGs or RGs:
 - 1: Series of invited talks focused on a specific theme
 - Encourage each speaker to prepare a paper
 - 2: Mini-conference
 - A call for papers and a review panel
 - Selected contributions presented at the workshop and the proceedings would be published under the GGF banner, as a GGF document or some other
 - 3: Focused study of a particular problem by a group of GGF participants
 - Outcome of the workshop is published as a special report to GGF as part of the standard document series

- GGF Chair
 - Overall Structure and effectiveness of GGF
 - Governance Role
 - + GFSG evaluation
 - » Regular evaluation of effectiveness of GFSG
 - + Area Formation and Operation
 - » Work with GFSG to evaluate need for changes in area structure (create, merge, etc.)
 - Chairs GFSG, serves as liaison between GFSG and GFAC
 - Represents GGF to external entities
 - Ensures that GGF meeting schedule, structure, logistics support the GGF mission
- GGF Editor
 - Manages document process flow for all GGF Documents
 - Facilitates GFSG review of documents (CP and REC)

- Create and manage a high-quality workshop series in conjunction with GGF tri-annual meetings.
 - Proposals accepted exclusively from GGF working and research groups
 - Solicited topics (from GROC, GFSG, GFAC, GGF Chair)
 - Unsolicited topics (from group chairs)
 - Arrange for publication of workshop proceedings as appropriate.
- Provide input to GFSG on approval of new Research Groups
 - GFSG needed a different perspective for evaluating RGs
- Provide peer-review on selected GGF documents
- Currently in Formation
 - Interim co-chairs Satoshi Matsuoka (Tokyo Inst. of Technology) and Dennis Gannon (Indiana University)
 - Members to be invited based on nominations from GFSG, GFAC

- **GFAC Members**

- Kyriakos Baxevanidis (EU/CEC)
- Frederica Darema (US NSF)
- Bill Feiereisen (LANL)
- Fabrizio Gagliardi (CERN)
- Tony Hey (UK)
- John Hurley (CAU)
- Sangsan Lee (KISTI)
- Paul Messina (Caltech) [chair]
- Yoichi Muraoka (Waseda Univ)
- Simon Nicholson (Sun)
- Alexander Reinefeld (ZIB)
- Mary Anne Scott (US DOE)
- Rick Stevens (ANL)
- Martin Walker (HP)
- Irving Wladawsky-Berger (IBM)

- **GFAC Role**

- External long-range advice
- Strategies for partnerships, governance, liaisons
- Global perspective
 - Representatives from multiple regions

- **GFAC Participants**

- Invited as individuals to give wise advice.
- Not as “representatives” of organizations

- **GFAC Status**

- Expect to add 4-6 new members in 2003
- Emphasis on increasing industry participation in GFAC

GGF, Incorporated, Roles and Responsibilities



- Not-for-Profit Corporation in the State of Illinois (USA)
- Legal entity to manage GGF operations
 - Financial management (via 3rd party public accounting firm)
 - Three annual meetings, 500-1000 participants per meeting - \$250K-700K cash flow per meeting
 - Sponsorship program
 - + Corporate and laboratory/university sponsors
 - + Government grants
 - Legal support for GGF activities (via external legal counsel)
 - Develop and manage intellectual property policies and procedures
 - Advise on open/fair process and practice
 - Carry insurance and provide indemnification for GGF volunteers
 - Operational Support (via internal staffing and commercial partners)
 - Information technology
 - + Websites, mailing lists, document repository
 - Staffing
- GGF, Inc. Board of Directors
 - Catlett (GGF Chair), Messina (GFAC Chair), Spada (Executive Director of GGF, Inc.)
 - Directors receive no financial compensation

- Goal for meeting venues is to rotate between US, Europe, and Asia Pacific – current practice is to meet in Chicago once a year
 - 22-27 June 2003: Seattle
 - GGF-8 will be joint with HPDC-12
 - + HPDC: 2.5 day Grid academic/research symposium
 - Plenary, Tutorials, Workshops, Work sessions
 - 5-8 October 2003: Chicago
 - GGF-9 will be work sessions only
 - March 2004: Frankfurt
 - June 2004: Asia-Pacific venue
 - September 2004: Chicago or Brussels

- **Initial** Establishment of GGF
 - GGF Chair and initial GFSG appointed by plenary vote
 - October 1999
 - However, initial GFSG was essentially “self selecting” and/or appointed by the Chair
 - GFAC members appointed by GFSG
 - Expansions of GFSG and GFAC in 2000, 2001, and 2002
 - New members selected by general consensus of existing GFAC, GFSG
 - Working Group and Research Group Chairs
 - Appointed by GFSG in conjunction with proposed group charter

- **Emerging** GGF Governance Process

- GGF Chair
 - Three year term, renewable, nominated by GFSG
- GFSG: ADs and Executive Committee
 - Three year term, renewable, nominated by Nominating Committee (RFC2727)
- GFAC and GROC members
 - Nominated by GFSG, GFAC and invited by Board of Directors, GGF, Inc.
- STATUS
 - Nominating committee to be formed in March 2003 to select “Class of 2003” GFSG members. Chair Brian Tierney (LBNL).

GFSG Nominating Committee



- The NomCom is composed of a random yet representative cross section of the GGF population.
 - NomCom chair (non-voting) is selected by GFSG
 - NonCom members are selected from a pool of volunteers
 - Must have attended 2 out of the last 4 GGF meetings
 - Ten NomCom voting members will be chosen from the pool of volunteers according to the procedure described by Donald Eastlake in RFC 2777, "Publicly Verifiable NomCom Random Selection". E.g. California lottery "SuperLotto" results.
 - NomCom members are barred from nomination
- GFSG candidates may be self nominated or 3rd party nominated
- NomCom then evaluates candidates from written statements, discussions, and possibly interviews with candidates and GGF members
- The resulting selections are forwarded to GFSG which can either accept or reject individuals

Intellectual Property Issues



- Must be formally addressed, especially in light of industry participation
- Mostly from IETF – “Reasonable and Non-Discriminatory” (RAND)
- RAND does not exclude the possibility of charging royalty fees for GGF standardized technology, e.g. patented technology could be incorporated into a standard
- Does not prevent some WGs from working under royalty free (RF) conditions
- W3C has just gone to RF, which is the approach favored by the open source community